

RemarksStatus of the Claims

Claims 5-9 are currently pending.

Claims 1-4 have been canceled and rewritten as new claims 5-8, respectively.

Allowable claim 4 has also been rewritten in independent form as new claim 9.

No new matter has been introduced.

Claim Rejections – 35 U.S.C. §103

Claim 1 had been rejected under 35 U.S.C. § 103 as being unpatentable over U.S. patent No. 5,386,863 to Hashimura et al. ("the Hashimura et al. '863 patent" or "the '863 patent"). Reconsideration and withdrawal of this rejection are respectfully requested insofar as it might be asserted against new claim 5.

As described at page 2, line 12 – page 3, line 7 of applicant's specification, the present invention is concerned with a tire intended for highway use and, more specifically, a highway-use tire of the type having a tread comprised of a single rubber mix that is folded at its axial edges, or wings, down onto the radially upper edges of the rubber mixes of the adjacent sidewalls of the tire to form a junction between the tread mix and each sidewall mix having a trace on the outer wall of each sidewall in the form of a more or less regular circle. In the prior art, such circular junctions between the tread mix and the sidewall mixes were covered with a layer of rubber mix referred to as a joint cover. Spec., page 2, lines 14-20. The object of the present invention is to eliminate the need for such joint covers without sacrifice of the suitability of the tire for intensive, severe highway use. Spec., page 2, line 21 – page 3, line 7.

In accordance with the invention, the applicant has achieved the foregoing object by positioning the circular junction J between the tread mix and each adjacent sidewall mix such

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that the junction forms "a substantially circular trace of radius R_C relative to the axis of rotation of the tire, said radius R_C lying, firstly, between $0.9 R_S + 0.1 R_B$ and $0.8 R_S + 0.2 R_B$ and, secondly, between R_{SS} and $0.9 R_{SS} + 0.1 R_B$, where R_S is the equatorial crown radius of the tread, R_{SS} is the equatorial radius of the center line of the carcass reinforcement, and R_B is the radius of the bead seat measured on the line perpendicular to the axis of rotation of the tire and passing through the center of gravity of the cross section of the bead wire" New independent claim 5 recites this specific placement of the radius R_C of the junction trace in combination with the other aforementioned features of the type of tire in question, and also specifies that the junction is not covered by a joint cover. The Hashimura et al. '863 patent neither discloses nor suggests the claimed invention.

In the first instance, the Hashimura et al. '863 patent is not concerned with the same problem in the prior art as was addressed by the applicant in making the claimed invention and, indeed, includes no mention whatsoever of either the manner in which the tread is joined to the sidewalls or of the relative location of the junction between the tread and the adjacent sidewalls. The entire disclosure of the '863 patent is concerned with the thickness of the sidewalls of the tire, and specifically with the value of a ratio H_O/H_i of the attenuation coefficient H_O of the outer sidewall to the attenuation coefficient H_i of the inner sidewall. Col. 2, lines 4-17. This has nothing to do with the junction between the tread and the sidewalls, and the Hashimura et al. '863 patent specification is silent as to such junction.

Notwithstanding the absence of recognition by Hashimura et al. of the problem in the prior art with which the present invention is concerned and the absence in the '863 patent of any teaching concerning a solution to such problem, the Examiner has concluded that it would have been obvious to one of ordinary skill in the art from Figure 1 of the patent drawings alone

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to join the tread to the sidewalls such that the junction therebetween lies within the specific range claimed by the applicant. We respectfully disagree.

Figure 1 of the Hashimura et al. '810 patent includes a dashed line (unnumbered) extending transversely across the crown of the tire between the surface of the tread 5 and the crown reinforcement (unnumbered). No explanation is given in the patent specification of what this dashed line represents; in fact, it is not referred to at all in the patent. The Examiner has assumed that it represents the dividing line between the tread 5 and the sidewalls 2a and 2b of the tire, although the patent specification does not say so.

Enclosed herewith is a Declaration under 37 C.F.R. 1.132 by the inventor, Noel Morel. As set forth in paragraphs 5 and 6 of the Declaration, Mr. Morel has studied the Hashimura et al. '863 patent and, in view of the disclosure thereof, has concluded that "one skilled in the art . . . would not understand the dashed line of Figure 1 of the '863 patent as teaching a desirable location for the tread-sidewall junction." Instead, Mr. Morel has concluded that "one skilled in the art could reasonably understand the dashed line to represent the location of the bottom of the transverse grooves in the tread." Dec., ¶ 6.

In addition, Mr. Morel has concluded that the Hashimura et al. '863 patent lacks any disclosure that the tread is joined to the sidewalls by folding the axially outer edges of the tread down onto the sidewalls (as required by claim 5) or, if such junction structure is employed, any disclosure that the tire should not include a joint cover (also as required by claim 5). Dec., ¶'s 7 and 8. Mr. Morel has further stated: "In the absence of a specific teaching that a joint cover should be eliminated, one skilled in the art would normally conclude that a joint cover would be present" [if the axially outer edges of the tread are folded onto the upper edges of the sidewalls]. Dec. ¶ 8.

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For the foregoing reasons, the Hashimura et al. '863 patent does not disclose or suggest to one skilled in the art any of the following: (1) that the axially outer edges of the tread 5 should be folded down onto the radially upper edges of the sidewalls 2a, 2b, (2) that the radius R_C of the junction trace between the tread and the sidewalls should be within the range specifically recited by the applicant, and (3) that no joint cover should be provided over the tread-sidewall junction, all as required by claim 5. We respectfully submit, therefore, that the invention of claim 5 would not have been obvious to one skilled in the art from the Hashimura et al. '863 patent.

Even assuming, *arguendo*, that the dashed line in Figure 1 of the '863 patent could be interpreted as the interface between the tread and the sidewalls, claim 5 still would not be obvious to one skilled in the art from the Hashimura et al. '863 patent because, firstly, the patent fails to disclose either that the axially outer edges of the tread are folded down onto the radially upper edges of the sidewalls or that the joint cover conventionally provided over the tread-sidewall junction should be eliminated. Thus, even if the Examiner's analysis of what one skilled in the art could possibly derive from Figure 1 as to the location of tread-sidewall junction is assumed to be valid (which the applicant does not admit), the invention as a whole claimed in claim 5 would not have been realized. Accordingly, claim 5 is further unobvious over the Hashimura et al. '863 patent.

Still further, for the reasons stated in response to the previous Office Action, one skilled in the art would not be led by Figure 1 of the Hashimura et al. '8863 patent alone to locate the tread-sidewall junction within the specific range claimed by the applicant, even assuming the dashed line in Figure 1 represents the junction. As noted, the Hashimura et al. '863 patent is completely silent not only as to the purpose of the dashed line but also as to its location relative

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to the other tire components. The Examiner has based the conclusion that the dashed line in '863 Figure 1 falls within applicant's claimed range by scaling the radial distance in Figure 1 between the bead seat and the intersection of the dashed line with the sidewalls 2a, 2b, notwithstanding that such distance is not discussed or defined in the patent specification and notwithstanding that the patent does not disclose that Figure 1 is drawn to scale. The Examiner has attempted to show that Figure 1 is a "working drawing," i.e., to scale, by arguing that the distances 0.2SH and 0.75SH in Figure 1 are positioned almost exactly at 20% and 75%, respectively, of the height SH. The distances 0.25H and 0.75SH, however, refer to the portion of the tire sidewall over which, in accordance with the Hashimura et al. invention, each of the spot averaged thicknesses G_o , G_i of the sidewalls 2a, 2b is determined. Col. 3, lines 36-42. This has nothing to do with the location of the dashed line allegedly representing the tread-sidewall junction, and does not establish that the position of the dashed line relative to the other tire components is to scale. No significance is attached in the Hashimura et al. '863 patent specification to the relative location of the dashed line, it has no pertinence to the invention of that patent, and, indeed, is not even mentioned in the patent specification. In such circumstances, there is no basis in law or in fact for the conclusion that one skilled in the art would find it obvious from the Hashimura et al. '863 patent to position the tread-sidewall junction as specified in claim 5. See M.P.E.P. § 2125, *citing Hockerson-Halberstadt, Inc. v. Aria Group Int'l*, 222 F.3d 951, 956, 55 U.S.P.Q.3d 1487, 1491 (Fed. Cir. 2000) ("When the reference does not disclose that the drawings are to scale and is silent as to the dimensions, arguments based on measurements of the drawing features are of little value.") *Id.* ("[I]t is well established that patent drawings do not define the precise proportions of the elements and may not be relied on to show particular sizes if the specification is completely silent on the issue.")) (emphasis added)

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In adhering to the prior rejection of obviousness based on the Hashimura et al. '863 patent, the Examiner noted the absence of evidence of unexpected results attributable to the claimed invention. As set out in paragraphs 2-4 of the Morel Declaration, comparative tests have been performed of (1) a tire constructed in accordance with the limitations of claim 1 of the application and without a joint cover (as now recited in claim 5) and (2) a tire constructed in accordance with the closest prior art, as described at page 2, line 12 to page 3, line 4 of applicant's specification. Based on such tests, Mr. Morel has concluded that the results for both tires "are similar and sufficient for intensive, severe highway use." Dec. ¶4. This evidence demonstrates that the claimed invention has eliminated the need for a joint cover, with its attendant disadvantages (see Spec., p. 2, lines 17-20), without sacrifice in tire performance or lifetime under conditions of intensive, severe highway use. Mr. Morel has also testified that "[h]erefore, the prior art has not eliminated the need for a joint cover in a vehicle tire [where the axially outer tread edges are folded down onto the radially upper edges of the sidewalls] and the tire is suitable for intensive, severe highway use." Dec. ¶8.

Claim 1 had also been rejected under 35 U.S.C. § 103 as being unpatentable over U.S. patent No. 3,825,052 to Matsuyama et al. ("the Matsuyama et al. '052 patent" or "the '052 patent") in view of U.S. patent No. 4,082,132 to Arai et al. ("the Arai et al. '132 patent" or "the '132 patent"). Reconsideration and withdrawal of this rejection are respectfully requested insofar as it might be asserted against new claim 5.

As noted above, applicant's claimed invention is directed to a vehicle tire that is suitable for intensive, severe highway use without requiring a joint cover over the junction between the adjacent edges of the tread and the sidewalls. Spec. page 2, line 21 – page 3, line 4. The Matsuyama et al '052 patent, in sharp contrast, discloses a tire for off-road construction

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vehicles that are intended to be operated on "rough grounds or quarry". Col. 1, lines 6-10 (emphasis added). To that end, the Matsuyama et al. tire is formed with "projection means 6" on the sidewalls 5 to protect the sidewalls against side cuts from rocks or the like. Col. 4, lines 28-34. On its face, therefore, the Matsuyama et al. '052 patent does not pertain to highway use tires and neither addresses the same problem in the art as does applicant's claimed invention nor proposes a solution to such problem. For this reason above, one skilled in the art would not look to the Matsuyama et al. '052 patent for guidance in designing a highway use tire to eliminate the need for a joint cover over the junction between the tread and the sidewall.

A close analysis of the '052 patent shows that, in fact, the "projection means 6" is not part of sidewalls 5 *per se*, but is an addition to the sidewalls. In that regard, the '052 patent states: "a projection means 6 is formed on sidewall 5 of a tire 10 . . ." (Col. 4, lines 10-11); the side-cut-preventing surface t on the projection means 6 "is to prevent rocks or other blocks . . . from coming toward the sidewall 5 . . ." (Col. 4, lines 30-32); "the projection means 6 should extend away from a plane E-E passing through the tire equator in excess of the sidewall 5;" (Col. 4, lines 40-42; "the distance W_1 between extended extreme ends p of the two projection means 6 . . . should be greater than the width W_2 of the tire at the sidewall portion[s] 5 . . ." (Col. 4, lines 47-51); and "the projection means 6 provides extra strength to the sidewall rubber layer 5 . . ." (Col. 5, lines 59-60).

Thus, the provision of a thickened projection means 6 on the sidewalls of the tire as taught by Matsuyama et al. is directly contrary to the applicant's stated object of eliminating the need for a joint cover, and involves the very disadvantage in terms of material and production costs sought to be avoided by the claimed invention. See, Spec., page 2, lines 17-20. The '052 patent, therefore, actually teaches away from the applicant's invention. Indeed, the axially outer

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edges of the Matsuyama et al. tread C are not actually joined to the sidewalls 5, but to the thickened projection means 6 added to the sidewalls 5.

Still further, contrary to the Examiner's interpretation of the '052 patent disclosure underlying the rejection of claim 1, Mr. Morel has concluded upon study of the patent that "one skilled in the art would not understand the patent to disclose that the sidewall 5 and the projection 6 are formed of a single rubber mix". Dec. ¶9. In that regard, Mr. Morel has noted that "the uniform cross hatching of Figure 3 includes the bead region as well as the sidewall 5 and the projection 6, and it is well known in the art that the bead region of a tire typically comprises different rubber mixes than the sidewall mix." Dec. ¶9. Mr. Morel has concluded, therefore, "that one skilled in the art . . . would not understand the '052 patent as disclosing a junction between a single mix of tread and a single mix of sidewall." Dec. ¶9.

In view of the foregoing fundamental differences between the claimed invention and the Matsuyama et al. '052 patent disclosure, we respectfully submit that claim 5 is unobvious over the '052 patent even assuming (which applicant does not admit) the junction between the tread C and the projection means 6 falls within the range specifically required by the claim.

With respect to the obviousness of the claimed location of tread-sidewall junction, the Examiner notes: "In this instance, Matsuyama et al. state that a distance y_1 , which is equal to 10% - 30% of the section height (equivalent to equatorial crown radius), separates the junction point from the axially outer edge of the tread (page 4). Thus, in the embodiment when $y_1=10\%$ (positively recited embodiment since value is an endpoint), the remaining tire portions (junction radius or height and tread camber) combine to define 90% of the equatorial crown radius. As a result, to meet the limitations of the claimed invention, the tread camber needs to be less than 10% of the equatorial crown radius." (Office Action, page 4)

The Examiner then alleges that the figures of the Matsuyama et al. '052 patent show that the tread camber is extremely small as compared to the section height of the tire, that the Arai et al. '132 patent suggests that a flat crown region is desired in heavy duty tires in order to prevent belt edge separation and uneven tread wear, and that a flat crown region is analogous to defining a small tread camber. (Office Action, pages 4-5). From this, the Examiner concludes that, in viewing the Matsuyama et al. and Arai et al. patents, one of ordinary skill in the art at the time of the invention would have readily appreciated that the tread camber of the Matsuyama et al. tire is less than 10% of the tire section height, such that the resulting tread-sidewall junction point height would be between 80% and 90% of the equatorial crown radius. While admitting that the Matsuyama et al. '052 patent fails to provide any specific quantitative dimensions, the Examiner also alleges that Figure 3 thereof depicts the junction point as being slightly below the equatorial radius of the carcass structure and, therefore, one of ordinary skill in the art would have readily appreciated the junction point as being located at a radial distance that is greater than 90% of the equatorial radius of the carcass structure but less than the equatorial radius of the carcass structure. (Office Action, page 5) We respectfully disagree.

Just as in the Hashimura et al. '863 patent, the drawings of the Matsuyama et al. '052 patent are not drawn to scale. There is no evidence that the dimensions disclosed in the figures are accurate, so that figures cannot be relied upon to teach or suggest the particular dimensions required by present claimed invention. See, M.P.E.P. §2125. In particular, it cannot be concluded from the patent drawings alone that the tread camber in the Matsuyama et al. '052 patent is less than 10% of tire section height, or that a "flat crown" as used in the Arai et al. '132 patent means less than 10% of the tire section height.

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The Examiner acknowledges that, even as combined in the manner proposed in support of the rejection, the resulting Matsuyama – Aria tire still does not provide the claimed invention, making it necessary to resort to a third reference, the Hashimura et al. '863 patent, for the alleged teaching of limitation (2). (Office Action, page. 5).

A *prima facie* case of obviousness requires a showing of a suggestion or motivation, either in the cited reference(s) or in the ordinary knowledge of those skilled in the art, to modify the cited reference(s) so as to arrive at the claimed invention. Here, no teaching or suggestion has been identified within any single cited reference to combine its teachings with those of the other references relied on in the rejection. Additionally, no suggestion or motivation has been asserted to be found in the prior art to modify the cited references to reach the claimed invention. The necessity for resort to a third reference to further modify the already modified Matsuyama-Aria tire strongly suggests that the motivation for the combination resides in the applicant's own invention and not the cited art. As such, the rejection is based on improper hindsight reasoning and should be withdrawn.

Claims 2 and 3, now rewritten as new claims 6 and 7, have been rejected under 35 U.S.C. § 103 as being unpatentable over either the Hashimura et al. '863 patent or the Matsuyama et al. '052 patent in view of the Aria et al. '132 patent, as applied to claim 1, and further in view of JP 06-032114 to Hashimura ("the JP '114 reference) and JP 09-136512 to Matsui ("the JP '512 reference"). Reconsideration and withdrawal of this rejection are respectfully requested insofar as it might be asserted against new claims 6 and 7.

Claims 6 and 7 are dependent upon new claim 5. The JP '114 reference and the JP '512 reference are cited only for the alleged disclosure of circumferential grooves in the sidewall in the region of the tread-sidewall junction. Neither reference is cited for - or discloses -

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the features missing from the Hashimura et al., Matsuyama et al. and Aria et al. references discussed above in connection with claim 5. Accordingly, claims 6 and 7 are patentable over the cited art for the same reasons as parent claim 5.

Additionally, claims 6 and 7 require that the circular junction J between the tread and the sidewall mixes is close to at least one circumferential groove or channel, the mean radius R_R of which is between $R_C + 10\text{mm}$ and $R_C - 10\text{mm}$, and the depth of which is between 10% and 30% of the total sidewall thickness at the radius R_R . The Examiner admits that the Hashimura et al. '863, Matsuyama et al. '052, and Aria et al. '132 patent do not teach or suggest a circumferential groove in the region adjacent to the junction point. (Office Action, page 5). The Examiner contends, however, that JP '114 depicts a single narrow groove in the shoulder region to reduce rolling resistance and provide anti-cracking properties, and notes that such grooves are shown in the drawings as being just below the equatorial radius of the carcass structure, which is allegedly analogous to the tread-sidewall junction point in the Hashimura et al. '863 patent and the Matsuyama et al. '052 patent. (Office Action, page 6).

It is noted that the circumferential grooves in JP '114 are not in the sidewall 2 but are instead in a buttress part 9 that is a transition part between the tread 1 and the sidewall 2. Thus, contrary to the Examiner's contention, the JP '114 reference does not teach providing grooves in the sidewall of the tire as required by claims 6 and 7. Further, the Examiner has shown no motivation in the JP '114 reference for one skilled in the art to provide circumferential grooves in either the Hashimura et al. tire, which has no analogous buttress region, or the Matsuyama et al. tire, in which the projection means 6 are provided for protection against side cuts and there would appear to be little purpose for circumferential grooves. Furthermore, there is no indication in JP '114 where the buttress grooves are located relative to the junction, if any,

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between the tread 1 and the sidewall 2. We submit, therefore, that it would not have been obvious from the JP '114 disclosure to modify either the Hashimura et al. tire or the Matsuyama et al. tire in the manner proposed in the rejection.

The JP '512 reference has been cited as showing the groove construction of the claimed invention, "in which the depth of the circumferential groove is within 10% and 30% of the sidewall thickness." (Office Action, page 6.) Even assuming, *arguendo*, that JP '512 does disclose such a groove depth, there is no disclosure in the reference as to the location of the groove relative to the junction between the tread and the sidewalls. Hence, the JP '512 reference would not suggest to one skilled in the art the groove placement specified in new claim 6.

Claims 6 and 7 are patentable over the cited references for these additional reasons as well.

Allowable Subject Matter

Claim 4 has been found to be allowable if rewritten in independent form to include all of the limitations of the base claim and any intervening claims.

Claim 4 has been rewritten herein as new independent claim 9 and, as such, includes all of the limitations of base claim 1 and intervening claim 2. Claim 4 has also been rewritten as new claim 8, which is dependent upon new base claim 5. Although new claims 8 and 9 are similar, they are not identical, and thus are not redundant.

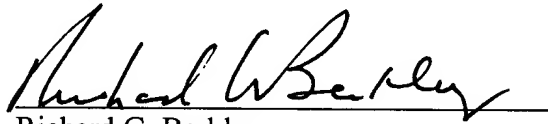
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Conclusion

In view of the foregoing, we respectfully submit that all pending claims are patentable over the prior art and that the application is in condition for allowance in all respects.

Dated: November 13, 2003

Respectfully submitted,

A handwritten signature in dark ink, appearing to read "Richard G. Berkley", is written over a horizontal line.

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